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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Pierre HIRSBRUNNER et al.

Confirmation No.: 7190

Patent No.: 6,916,366 B2

Application No.: 09/902,555

Patent Date: July 12, 2005

Filing Date: July 10, 2001

For: AQUEOUS COMPOSITION FOR
RENDERING A SUBSTRATE
HYDROPHOBIC

Attorney Docket No.: 81358-200

Certificate
AUG 10 2005
of Correction

REQUEST FOR CERTIFICATE OF CORRECTION UNDER 37 C.F.R. § 1.322

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Patentees hereby respectfully request the issuance of a Certificate of Correction in connection with the above-identified patent. The corrections are listed on the attached Form PTO-1050, submitted in duplicate. The corrections requested are as follows:

On the title page, please insert the following section:

-- (30) **Foreign Application Priority Data**

April 17, 2001 (EP)01109290 --

Priority of European Application No. 01109290 filed April 17, 2001 was made on applicants' Declaration filed with the original application papers on July 10, 2001. The certified priority document was filed on July 19, 2004 to perfect applicants' claim, and the Examiner acknowledged receipt of the priority document in the Office Action mailed August 24, 2004. Thus, it respectfully is requested that the Foreign Application Priority Data be included by way of Certificate of Correction.

At column 6, line 66 (claim 9, line 6), delete "10/and" and insert -- 10/1 and --. Support for this change appears in application claim 20.

AUG 10 2005

The requested corrections are for errors that appear to have been made by the Office. Therefore, no fee is believed to be due for this request. Should any fees be required, however, please charge such fees to Winston & Strawn LLP Deposit Account No. 50-1814. Please issue a Certificate of Correction in due course.

Respectfully submitted,

8/2/05
Date

Allan A. Fanucci
Allan A. Fanucci (Reg. No. 30,256)

WINSTON & STRAWN LLP
Customer No. 28765

212-294-3311

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO.: 6,916,366 B2
DATED: July 12, 2005
INVENTORS: Hirsbrunner et al.

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Title page:

Insert the following section:

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Column 6:

Line 66, delete "10/and" and insert -- 10/1 and --.

AUG 10 2005

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Insert the following section:

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April 17, 2001 (EP)01109290 --.

Column 6:

Line 66, delete "10/and" and insert -- 10/1 and --.



US006916366B2

(12) **United States Patent**
Hirsbrunner et al.

(10) **Patent No.:** US 6,916,366 B2
(45) **Date of Patent:** Jul. 12, 2005

(54) **AQUEOUS COMPOSITION FOR
RENDERING A SUBSTRATE HYDROPHOBIC**

(75) **Inventors:** Pierre Hirsbrunner, Corseaux (CH);
Ian Horman, Blonay (CH)

(73) **Assignee:** Jacques Vlonnet, Vessy (CH)

(*) **Notice:** Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

(21) **Appl. No.:** 09/902,555

(22) **Filed:** Jul. 10, 2001

(65) **Prior Publication Data**

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(51) **Int. Cl.⁷** C09K 17/46

(52) **U.S. Cl.** 106/287.14; 106/287.1;
106/603; 405/263

(58) **Field of Search** 106/603, 2, 287.14,
106/287.1; 405/263

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Primary Examiner—C. Melissa Koslow

(74) *Attorney, Agent, or Firm*—Winston & Strawn LLP

(57) **ABSTRACT**

A substrate treatment composition of an aqueous solution for imparting hydrophobicity to a substrate or for rendering the substrate hydrophobic. This solution preferably includes sodium and/or potassium methylsiliconate and sodium and/or potassium silicate. Also, the use of this composition for the treatment of a substrate to impart hydrophobicity or to render the substrate hydrophobic.

19 Claims, No Drawings

(30) Foreign Application Priority Data
April 17, 2001 (EP) 01109290

TABLE 2

EVAPORATION KINETICS		0-1 h	1-3 h	3-5 h	5-8 h	8-24 h	Remainder
No	TREATMENT						
NTa	Reference sand with no treatment	25.2	17.1	8.3	3.1	0.92	<1
NTb	Repetition	26.1	17.1	8.6	2.5	0.93	<1
1a	GSP 1% at 1 L/m ²	2.9	2.8	3.1	2.9	2.9	33%
1b	Repetition	3.9	3.7	3.9	3.2	2.9	25%
2a	GSP 1% at 0.5 L/m ²	4.6	4.3	4.5	3.8	3.3	14%
2b	Repetition	4.5	3.8	4.7	3.8	3.5	11%
3a	GSP 0.4% + SI 0.4% at 0.5 L/m ²	3.3	3.1	3.5	2.8	3.0	27%
3b	Repetition	3.8	3.4	3.8	3.5	3.3	10%
4a	GSP 0.4% + SI 0.4% at 0.25 L/m ²	4.8	4.2	4.3	4.2	3.4	11%
4b	Repetition	5.0	4.6	4.7	4.7	3.4	8%

Results:

1. Silicate added in a ratio of the order of 2 molecules for 1 molecule of silicate permits at least a 50% reduction in the quantity of methylsilicate needed (compare treatments 2 and 3). In other words, one can use a mixture of 0.5 vol. industrial methylsilicate at 28%+0.5 vol. technical grade silicate 28% equivalent in SiO₂ for a similar— if not greater—anti-evaporation effect than with 1 vol. of industrial methylsilicate alone.
2. Using 0.5 L/m² of the mixture of silicate at 0.4% and at 0.4% gives a similar effect to 1 L/m² of a solution of 1% potassium methylsilicate (compare treatments 1 and 3). In practical terms, this means that the volume of water needed to apply the composition can be reduced by a factor of at least 2, without losing the efficiency of evaporation protection, namely by applying 5 m³ per hectare instead of the 10 m³ per hectare necessary with a solution of 1% m³ potassium methylsilicate alone.
3. The use of 0.25 L/m² of the mixture silicate 0.4% and potassium methylsilicate 0.4% already offers a very efficient treatment, as seen by comparing treatment No. 1, corresponding to a treatment of 100 L potassium methylsilicate alone diluted in 10 m³ of water per hectare, with the quantities in treatment No. 4, corresponding to a treatment of only 10 L potassium methylsilicate in 2.5m³ per hectare, albeit with the addition of 10 L of silicate.

These results above were obtained on the substrate "sand". One of ordinary skill in the art can readily adapt any of the solutions of the present invention for use on other substrates based on the granulometry, properties, and condition of the substrate or substrate components. For example, for a substrate that has a high level of salinity, such as would be found by the ocean, other amounts and concentrations of the hydrophobic agents in the solution, generally of a higher nature, would have to be considered. The skilled artisan can conduct routine testing to determine the optimum formulation of the treatment solution and the concentration of the hydrophobic agents to be included therein based on the specific substrate materials, components, properties and conditions of use.

As noted above, the substrates to be treated are preferably those which are porous to the aqueous treatment solution, so that the hydrophobic agents can be introduced into the substrate. The hydrophobic agents can be mixed with substrate forming components with the resulting mixture deposited on a surface to form a layer having hydrophobic properties. Other variations and modification can be made by the skilled artisan, and all are intended to fall within the scope of the appended claims.

What is claimed is:

1. An agricultural soil treating agent comprising an aqueous mixture of a C1 to C4 alkyl silicate compound and a silicate compound which also includes a coloring agent, an agrochemical principle or both, with the silicate and silicate compounds being present at a molar ratio of silicate compound to silicate compound of 0.5/1 to 10/1 and in amount effective to increase hydrophobicity of the soil after the aqueous mixture is applied thereto due to the formation of silicic acid or silica gel therein in order to reduce water evaporation from the treated soil, wherein the silicate compound is present in an amount of about 0.1 and 1% by weight and the silicate compound is present in an amount of about 0.01 and 5% by weight.
2. The agent of claim 1 wherein the silicate compound is an alkali metal alkyl silicate, the silicate compound is an alkali metal silicate, and the molar ratio is about 1:1 to 5:1.
3. The agent of claim 1 wherein the silicate compound is an alkali metal methyl silicate, the silicate compound is a sodium or potassium hydrosoluble silicate, and the molar ratio is about 1:1 to 5:1.
4. The agent of claim 1 wherein the silicate compound is a sodium or potassium methyl silicate, the silicate compound is a sodium or potassium ortho or meta-silicate, and the molar ratio is about 2:1 to 3:1.
5. The agent of claim 1 wherein the soil to be treated comprises sand.
6. The agent of claim 1 which contains both a coloring agent and an agrochemical principle.
7. The agent of claim 1 wherein, after being applied to the soil, the silicate compound is present in an amount of between about 2 and 60 Kg per hectare, and the silicate compound is present in the treated substrate in an amount of between about 3 and 150 Kg per hectare.
8. The agent of claim 7 wherein the agricultural soil includes one or more of sand, gravel, tree bark, sawdust, compost, or earth, and the amount of water needed for application of the aqueous mixture is reduced by a factor of two compared to that needed for the application of a silicate by itself for the same reduction of water evaporation from the treated soil.
9. An agricultural soil treating agent consisting essentially of a solution of an agrochemical principle and an aqueous mixture of a C1 to C4 alkyl silicate compound and a silicate compound, with the compounds being present at a molar ratio of silicate compound to silicate compound of 0.5/1 to 10/1 and in combination in amount effective to increase hydrophobicity of the soil after the agent is applied

10/1 and